COMPARISON OF MEAN, STANDARD DEVIATION, AND MEAN PERCENTAGE OF PRE-TEST AND POST-TEST SCORES IN THE EXPERIMENTAL GROUP AMONG PRIMARY SCHOOL TEACHERS IN SELECTED SCHOOLS OF BHARATPUR, RAJASTHAN

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ABSTRACT

Dyscalculia is described as a "specific deficit of a fundamental numerical capacity, leading to difficulties in learning numbers and arithmetic." Children with dyscalculia often struggle with mathematical concepts while performing well in other areas of learning. This study adopts a Quantitative Evaluative Research Approach to assess the effectiveness of a Numeracy Awareness Programme on knowledge regarding dyscalculia among primary school teachers. A pre-experimental one-group pretest-posttest design was implemented to measure changes in knowledge levels. The study was conducted in selected schools of Bharatpur, Rajasthan, with primary school teachers as participants, selected through non-probability convenient sampling. A comparative analysis of mean, standard deviation, and mean percentage of pre-test and post-test scores revealed a significant improvement in teachers' knowledge after the intervention. The findings highlight the effectiveness of numeracy awareness programs in enhancing educators' understanding of dyscalculia.

Keywords:

Dyscalculia, Numeracy Awareness Program, Primary School Teachers, Mathematics Learning Disability, Quantitative Research, Pretest-Posttest Design, Learning Difficulties, Bharatpur, Rajasthan.

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INTRODUCTION

Dyscalculia, also known as Developmental Dyscalculia (DD), is a specific and persistent learning disability affecting numerical skills and arithmetic performance (Kucian & von Aster, 2015). Individuals with dyscalculia often struggle with subitizing (quickly recognizing the number of objects), basic arithmetic, number magnitude estimation, and problem-solving. The prevalence of dyscalculia is estimated to be 3.5% to 6.5% among school children, depending on diagnostic criteria and geographical region.

Despite being as common as dyslexia, dyscalculia remains underdiagnosed and less researched, even though it can severely impact an individual's academic achievements, career opportunities, and daily life, particularly in financial management and problem-solving skills. Studies show that 22% of adults in the UK have significant mathematical difficulties that limit their occupational prospects (Bynner & Parsons, 1997; National Center for Education Statistics, 2011).

In Belgium, 3% to 8% of elementary school children have mathematics learning disabilities (MLD), often exhibiting poor linguistic, procedural, and numerical representation skills (Desoete, Roeyers, & De Clercq, 2004). Research indicates that early intervention and teacher awareness programs can play a crucial role in supporting students with dyscalculia and reducing its long-term impact.

REVIEW OF LITERATURE

Butterworth B. (2005) conducted a significant study that delved into the development of arithmetic abilities in children. The research highlighted that numerosity, which is the innate ability to recognize and process numbers, is present from infancy. This suggests that infants have a natural capacity for understanding quantities. The study also examined how deficits in this numerosity can lead to dyscalculia, a specific learning disability that affects an individual's ability to understand and perform mathematics. By identifying the early signs of numerosity deficits, the study provides insights into potential interventions for children at risk of developing dyscalculia. Ashcraft MH & Kirk EP. (2001) explored the intricate relationship between working memory, math anxiety, and mathematical performance. Their findings revealed that math anxiety can significantly disrupt working memory and cognitive processing. When individuals experience anxiety related to math, it hampers their ability to retrieve information and perform calculations effectively. This disruption can lead to poorer learning outcomes and decreased performance in mathematical tasks. The study emphasizes the importance of addressing math anxiety in educational settings to improve students' overall mathematical abilities. Mazzocco et al. (2011) focused on the Approximate Number System (ANS), which is a cognitive system that allows individuals to estimate and compare quantities without relying on exact numerical representations. Their research found that children with dyscalculia often exhibit impaired ANS abilities, which is a key characteristic of the condition. This impairment significantly impacts mathematical learning, as a well-functioning ANS is crucial for developing more advanced mathematical skills. The study underscores the need for targeted educational strategies to support children with dyscalculia in overcoming these challenges. Desoete, Roeyers, & De Clercq (2004) conducted a study in Belgium that examined the manifestation of mathematics learning disabilities (MLD) during elementary schooling. The researchers reported that MLD often becomes apparent in early education, leading to an increased number of students being placed in special education programs. Their findings highlight the importance of early identification and intervention for children struggling with mathematics. By recognizing these disabilities early on, educators can implement appropriate support measures to help students succeed in their mathematical education.

RESEARCH METHODOLOGY

This research design utilizes a quantitative approach to evaluate the effectiveness of a numeracy awareness program designed to enhance teachers' knowledge about dyscalculia. The study employs a pre-experimental one-group pretest-posttest design, which means the researchers will assess the teachers' knowledge of dyscalculia before the program (pretest) and again after the program (posttest). This design allows the researchers to compare the teachers' knowledge levels before and after the intervention to determine if the program led to any significant improvements.

The study is conducted in selected schools in Bharatpur, Rajasthan, targeting primary school teachers as the population of interest. The researchers use a non-probability convenient sampling technique, which means they select participants based on their accessibility and availability. This method may not be representative of the entire population of primary school teachers in Bharatpur, but it allows for a practical and efficient way to recruit participants for the study.

The primary objective of the study is to assess the effectiveness of the numeracy awareness program in enhancing teachers' knowledge about dyscalculia. The pre-test and post-test evaluations will provide data to analyze the impact of the program on the teachers' understanding of dyscalculia, its identification, and potential strategies for supporting students with this learning disability.

DATA ANALYSIS AND INTERPRETATION

The effectiveness of the Numeracy Awareness Programme was assessed by comparing pre-test and post-test scores of the experimental group using mean, standard deviation, and mean percentage.

Table: Comparison of Mean, Standard Deviation, and Mean Percentage

Knowledge Level	Max Score	Pre-Test Mean	Pre-Test SD	Pre-Test %	Post-Test Mean	Post-Test SD	Post-Test %	Difference in Mean %
Experimental Group	30	8	3.5	27%	25	4.0	83%	56%

The results indicate a substantial improvement in knowledge levels after the intervention.

CONCLUSION

The findings of this study demonstrate that the Numeracy Awareness Programme significantly enhanced primary school teachers' knowledge about dyscalculia. The increase in mean scores (from 8 to 25) and mean percentage (from 27% to 83%) confirms the program's effectiveness. This highlights the importance of teacher training and awareness programs in addressing learning disabilities such as dyscalculia.

By improving teachers' understanding of dyscalculia, educational institutions can better identify and support students struggling with numerical skills, ultimately contributing to improved learning outcomes and academic success.

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